M.A.R.K. - Make A Robot Kit - Smart AI Robot Kit for Learning Programming & Artificial Intelligence, Supports Graphical Programming & Micropython, Rich Free Course Materials Available, Ideal for STEM Education

This product does not include batteries and you need to insert 6 x AA batteries in order to get started.

Features

- **Learn coding & robotics** through fun projects
- Get Started with **AI recognition & On-device model training** with Ease
- Learn basic **self-driving car functionality** like lane following, traffic sign identification
- Durable Aluminum Body with Built-in 2.4″ color Screen & Pan-tilt camera
- Rich **Free Course Materials** for Machine Learning and Autonomous Driving
- Accessible Yet Intelligent: Support **Scratch** 3.0 Based Graphical Coding Software & **Micropython**
- Easy Assembly, Hands-on construction
- Customizable, extendable & open-source

This kit is Suitable for:

- Students ages 12+
- Maker teachers & STEM camps
- DIY Robot hobbyists
- Homeschooling educators
- AI experimenters
- AI & robotics learners

Description

Interactive, Engaging through AI Recognition, and Train Your Own Model

Mark comes pre-loaded with functionality to recognize colors, shapes, and objects within these categories. But of course, you should train your own custom models! We provide a colab notebook to guide you through this process. Check out this video of MARK interacting with pets!

Watch Video At: https://youtu.be/PaZci9GIw5I

Pretrained Models				
Common Objects	Traffic signs	Numbers	Domestic animals	Zoo Animals
book	turn left	0	dog	tiger
cup	turn right	1	cat	elephant
pen	go straight	2	bird	crocodile
computer	u-turn	3	hedgehog	bear
smartphone	stop	4	mouse	giraffe
knapsack	Speed Limit: 5	5		
pizza	Speed Limit: 80	6		
bomb	No entry	7		
human	yield	8		
chair	Pedestrian Crossing	9		

On Device Model Training

Simple custom classifier models can be trained on MARK through data collection via the onboard camera, automatic data processing & model training by the CyberEye (brains of the MARK), and model deployment directly on MARK which can be saved for reuse on SD card.

Make A Self Driving Car That can Interactive with the external world

Implement your self-driving, advanced map & story-based projects or with Mark or use in robotics competitions! MARK is designed in the form of a car, so we'll preload code which allows you to implement basic self-driving car functionality once everything is assembled and connected.

There is also an ultrasonic sensor included for collision avoidance, a button which you can program to change modes and an electromagnet which gives MARK a "pick up" function. Simply attach metallic stickers (included in pack) on the back of an image card.

Durable Aluminum Body with Built-in 2.4″ color Screen & Pan-tilt camera

MARK has great extension capabilities, it includes a 2.4” color display screen and a pan-tilt camera.
With the display screen and camera, M.A.R.K. allows you to implement a variety of fun and educational projects related to robotics, self-driving technology, and computer vision.

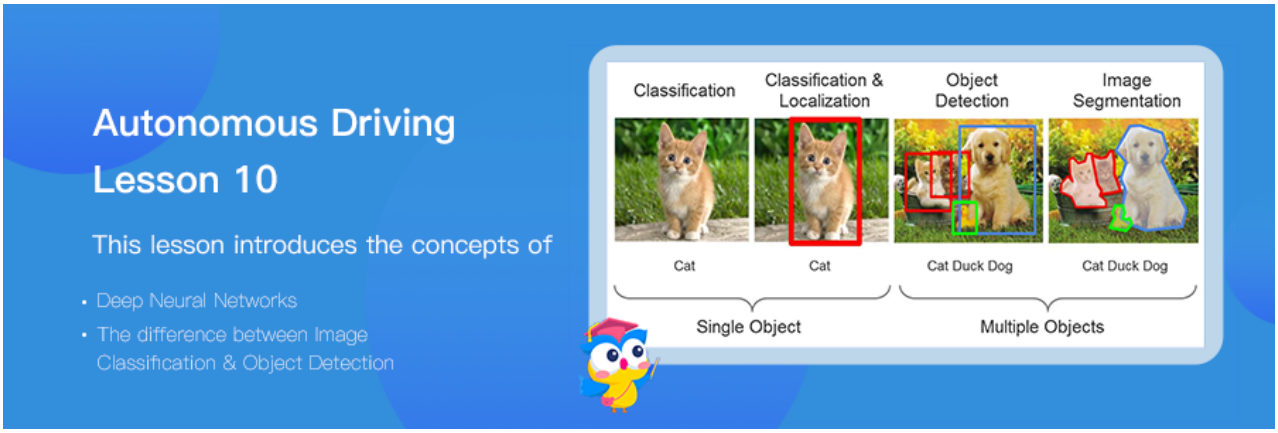
The aluminum outer shell has a sleek design, with programmable headlights giving MARK a high-tech feel.

Rich Free Course Materials

make2Learn is our project and lesson sharing platform where you can access course content directly related to MARK and our other support projects. There are courses for Machine Learning and Autonomous Driving. Find more Lessons on make2learn.tinkergen.com.

Autonomous Driving Course Materials of the Artificial Intelligence Series

Machine Learning Course for students aged 15-18 (recommended for grades 9-12)



Accessible Yet Intelligent

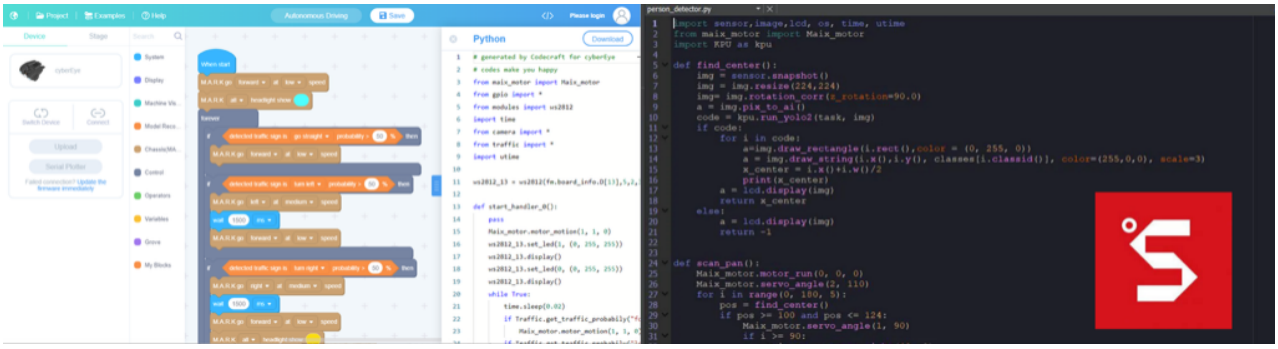
Codecraft: Scratch 3.0 Based Graphical Coding Software for Beginners

We want AI learning to be accessible to those from a variety of backgrounds so you'll be able to code MARK graphically by dragging and dropping code blocks.

Codecraft is a graphical programming software based on Scratch 3.0, developed by us which is available on desktop & in-browser. Codecraft will support MARK AI functions in drag and drop code, as well as enabling you to see what the MicroPython code would look like. Simply connect and then click upload to start using your MARK with it's edited program. If you're confident with your coding skills you can also go ahead and edit text-based Python code in Codecraft. You can even use your own custom models through Codecraft.

Micropython: for More Advanced Users

MaixPyIDE from SIPEED - More advanced users can choose to directly write code for MARK using MaixPyIDE. The cyberEYE mainboard's K210 chip has Microython firmware which features openMV support.



Easy Assembly, Hands-on Construction Experience

For a Hands-on construction experience, MARK will come disassembled in parts with the tools you need to make your robot. But don't worry! The kit has abundant documentation, including a step-by-step assembly guide with video instructions.

The top cover can be easily detached and re-attached at any time. The front of MARK is equipped with a mounting platform to make it easy to install a robotic arm or camera attachment, allowing you to extend MARK AI application possibilities.

Customizable, Extendable & Open Source

Check the Robotics Extension Pack for Make a Robot Kit! Aim the harmless rubber band slingshot with AI or recognize and feed your pet a treat with the grabber attachment!

And there is also a machine learning Pack which helps users discover about Machine Learning, implementing the popular SUMO robot projects with the attachments and SUMO Competition Map.

Not enough? You can also 3D print your own cover to customize MARK into whatever color you like! Add structural modifications onto the Chassis which includes multiple attachment points.

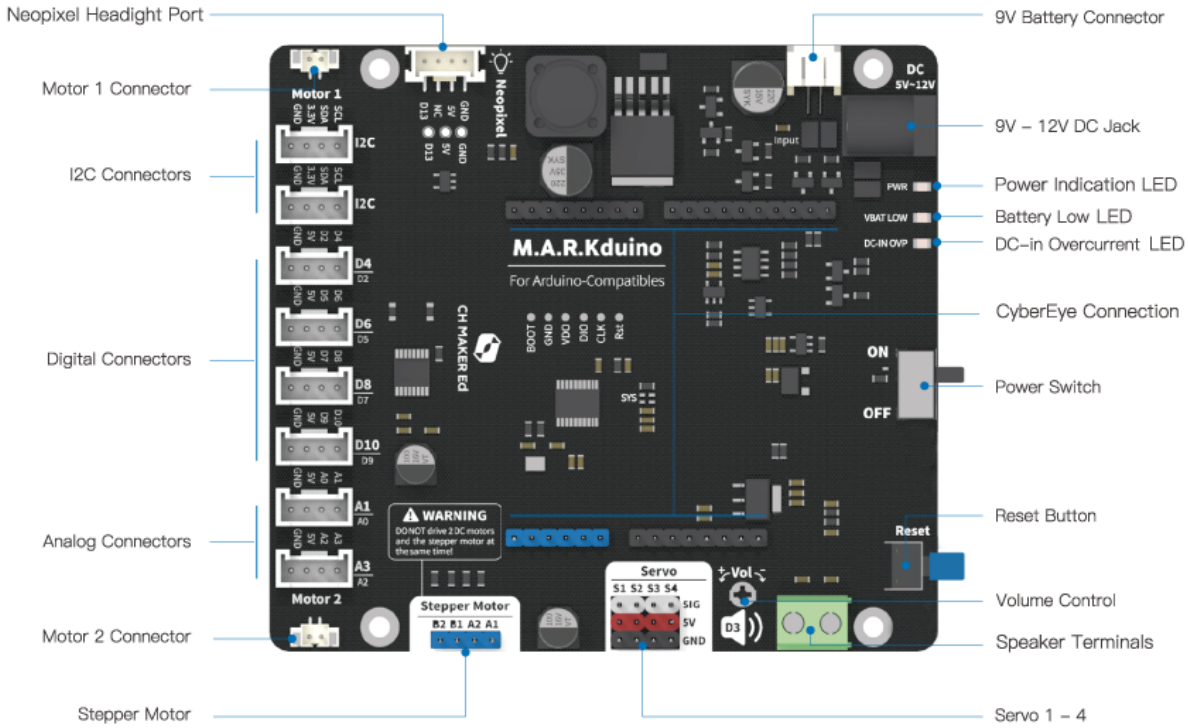
* Note: grabber, slingshot attachment shown in images above are not included in Make A Robot Kit.

** Multiple color choices are not available for purchase, but STL files for 3D FDM printing with pla colors will be provided.

Interface board - Markduino

Included are stepper motor & spare servo ports which you could utilize to extend MARK as a robot with a grabber or conveyor functionality. The Markduino also includes spare Digital, Analog, and I2C ports, into which you can easily plug & play some compatible Grove series sensors. Read more about grove here. Those familiar with Arduinos will notice that the markduino pinout fits, so projects can be implemented with this controller too.

We've developed a mini-grabber and rubber slingshot attachment to extend the fun you can have with your MARK. This will be available in the Robotics Extension Pack but you are also welcome to make your own designs to extend MARK's applications.



Specifications

- Power Supply ：6 x AA batteries
- Data connection: USB C
- Display: 2.4" color LCD
- Storage: micro SD slot
- Connectivity via onboard ESP32: Wifi 2.4G, Bluetooth 4.2
- CPU: RISC-V Dual Core 64 bit with FPU
- KPU: CNN Hardware accelerator 0.25 TOPS @ 0.3W, 400MHz; overclock to 800MHz, 0.5 TOPS
- Static RAM 8MB Total: 6MB SRAM, 2MB AI SRAM
- Image Recognition: QVGA@60fps VGA@30fps or overclocked 60fps

What's in the Box

x1

Project Map

x1

Quick Start Guide

x16

Recognition Cards

x3

Card Support

x1

Chassis Cover

x1

M.A.R.Kduino

x1

Headlight Board

x1

Speaker

x1

Ultrasonic Sensor

x1

Electromagnet

x1

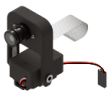
Line Follower

x1

Button

x1

Chassis



x1

Pan-Tilt Camera

x2

Tyre

x1

Universal Wheel

x1

Line Follower Stand

x1

cyberEye & 2.4" Color LCD

x1

Philips Head

x1

Flat Head Screwdriver

x14

Magnetic Sticker

x3

20cm Grove Cable

x3

10cm Grove Cable

x1

1m Type-C USB Cable

x1

Hardware Box

x20

M3x 8mm Screws

x10

Spacer

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